Project Prioritization Process
STIP Workshop
4-16-2015

Outline:

- Requirements & Strategic Direction
- Preservation & Rehabilitation
- Capacity
- Safety

Utah Legislative Requirement

Utah Code Section 72-1-304

(Enacted by Senate Bill 25, 2005 General Session)

- Directs the Commission, in consultation with the Department and the Metropolitan Planning Organizations in the State, to issue rules that establish a prioritization process for new transportation projects that meet the Department's strategic goals.

Rule R940-6. Prioritization of New Transportation Capacity Projects

- Written to fulfill the directive given by State Code 72-1-304.

Administrative Rule

Rule R907-68 States,

The Department will use the Strategic Goals to:

- First seek to preserve & optimize mobility of the current infrastructure.
- Improve the mobility of the existing system through technology like intelligent transportation systems (ITS), as well as using other tools such as access management, transportation demand management, etc…
- Address safety through projects in preservation and mobility, as well as target specific highway locations for safety improvements.
- Add new capacity projects.

All recommendations to be forwarded to the Transportation Commission for its review/action.

The Department's Strategic Goals:

- **ZERO CRASHES, INJURIES AND FATALITIES**

  UDOT is committed to safety, and we won't rest until we achieve zero crashes, zero injuries and zero fatalities.

- **PRESERVE INFRASTRUCTURE**

  We believe good roads cost less, and through proactive preservation we maximize the value of our infrastructure investment for today and the future.

- **OPTIMIZE MOBILITY**

  UDOT optimizes traffic mobility by adding roadway capacity and incorporating innovative design and traffic management strategies.

Project Selection & Prioritization

Remember…

The Ranking Process is designed to support the **decision-making process**, rather than render a decision.

The process is a means to help the Utah Transportation Commission generally prioritize and rank projects in order of their importance.

Commission can override the process as long as it is discussed in a public meeting and a reason for the decision is documented.

Plan to Program

Input - LRP, MPO's, JHC, UDOT, Public, Data

Strengthen Economy

Zero Crashes, Injuries & Fatalities

- Safety Management System

Optimize Mobility

- Traffic Demand Management
- Access Management
- Capacity Prioritization Process

Preserve Infrastructure

- Asset Management

Projects

Statewide Transportation Improvement Program (STIP)

Plan to Program

Input - LRP, MPO's, JHC, UDOT, Public, Data

Strengthen Economy

Zero Crashes, Injuries & Fatalities

- Safety Management System

Optimize Mobility

- Traffic Demand Management
- Access Management
- Capacity Prioritization Process

Preserve Infrastructure

- Asset Management

Projects – Safety Improvements

Statewide Transportation Improvement Program (STIP)

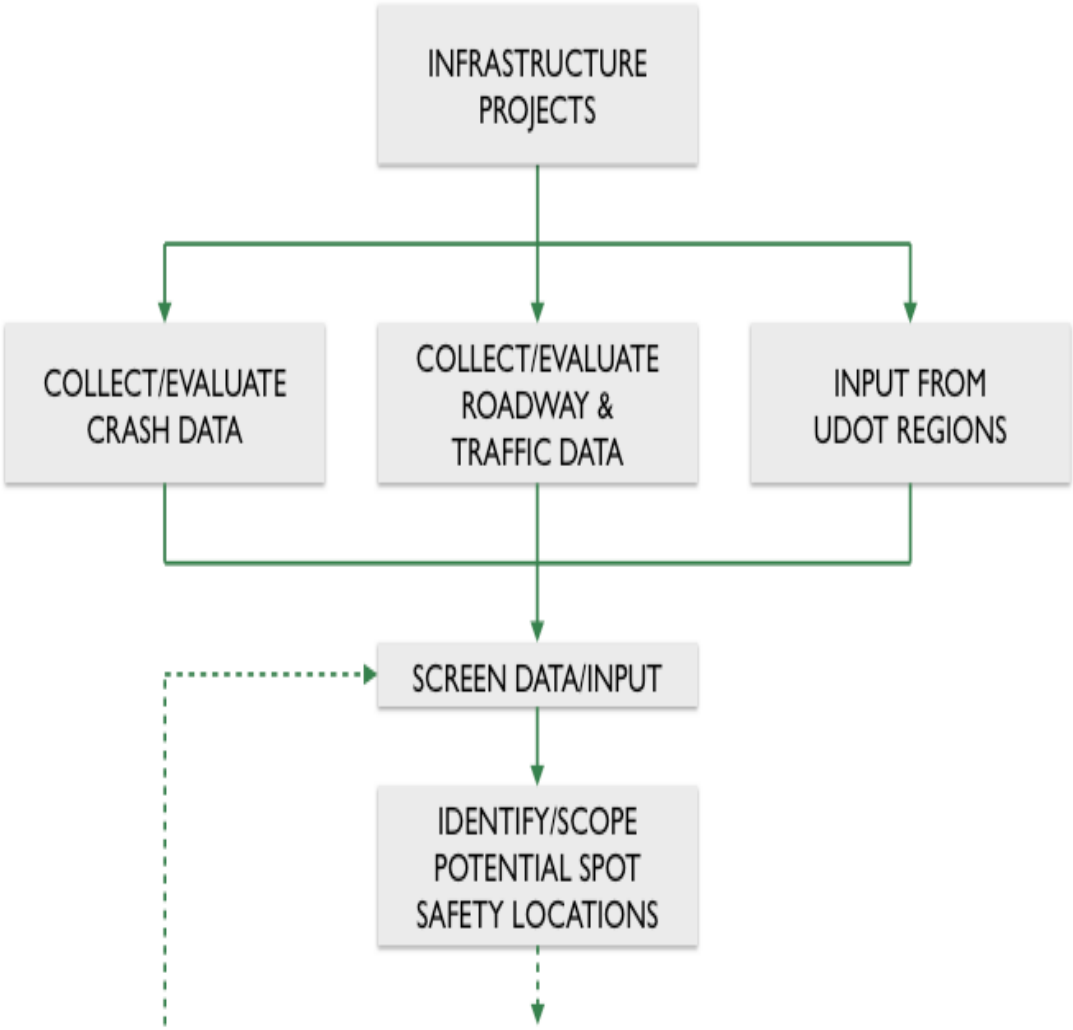
Improve Safety

- Highway Safety Improvement Program
- Safe Routes to Schools
- Railroad Crossing

- State Spot Safety Improvement Program
- State Barrier
- State Lighting
- State Signals

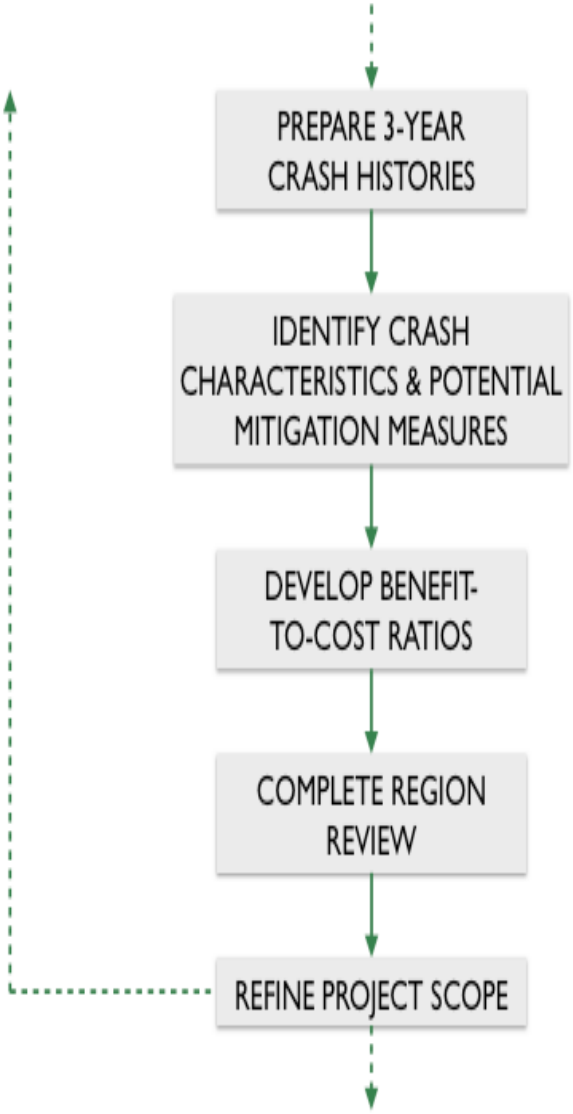
Improve Safety

Planning Stage



Improve Safety

Analysis Stage



Improve Safety

Project Prioritization Factors

- Greatest Benefit to Reduce Fatal and Serious Injury Crashes
- Benefit-To-Cost Ratio
- Timeline to Completion
- Coordination with Other Projects

Plan to Program

Input - LRP, MPO's, JHC, UDOT, Public, Data

Strengthen Economy

Zero Crashes, Injuries & Fatalities

- Safety Management System

Optimize Mobility

- Traffic Demand Management
- Access Management
- Capacity Prioritization Process

Preserve Infrastructure

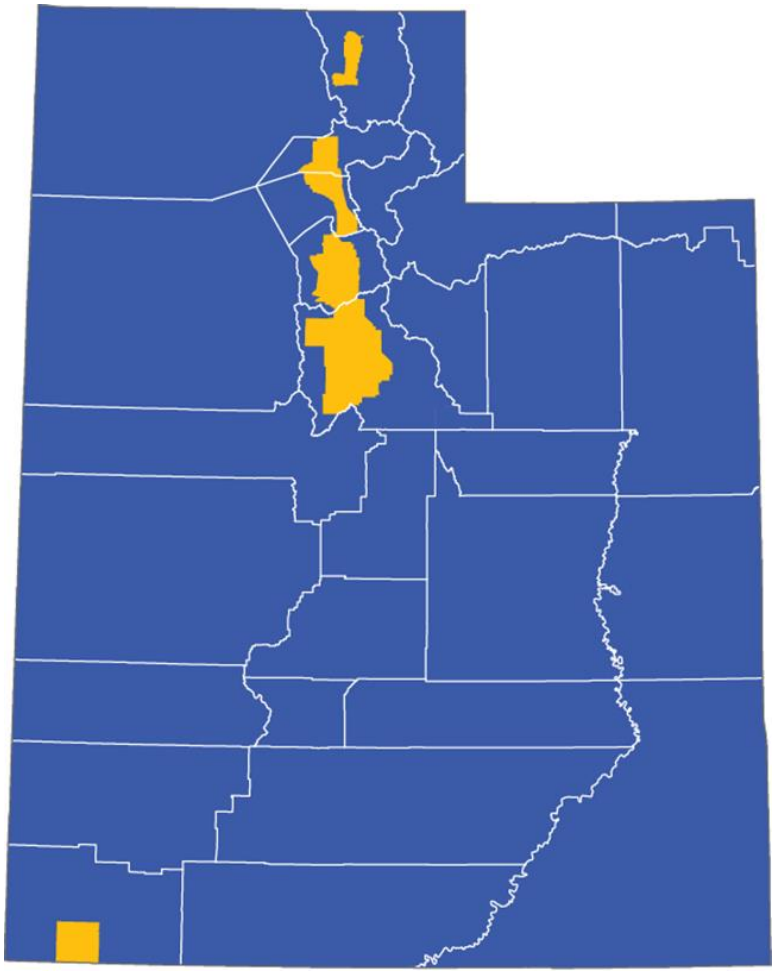
- Asset Management

Projects - ITS, Access, Capacity

Statewide Transportation Improvement Program (STIP)

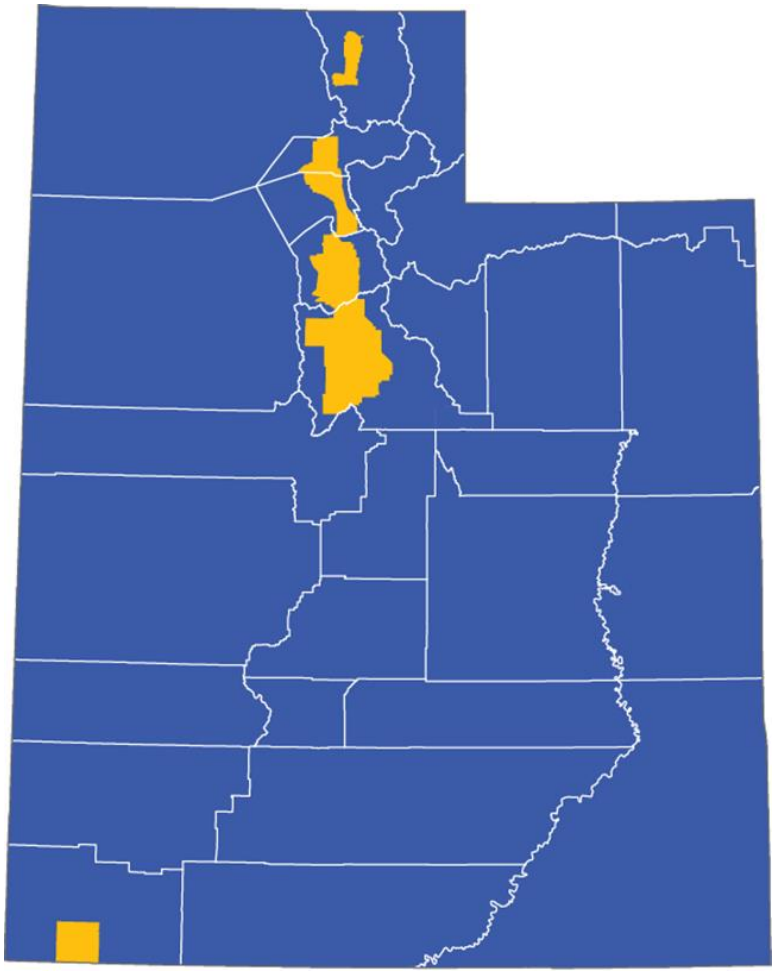
Planning

- Metropolitan Planning Organizations develop Long Range Plans for Urban Areas (RTPs)
- UDOT is responsible for the remaining Rural Area of the State (LRP)

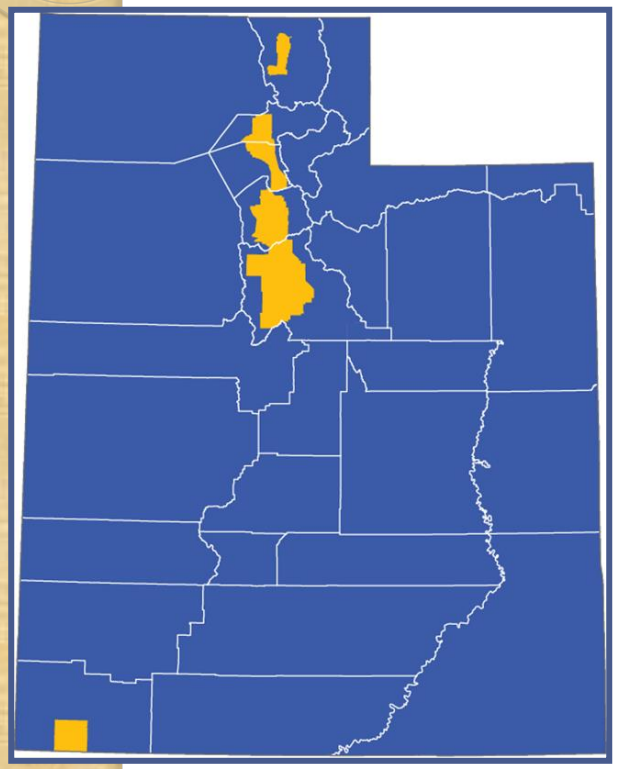


Planning

- UDOT and Metropolitan Planning Organizations update the LRP every four years and coordinate several elements:
  - Schedule of Updates
  - Plan Phasing
  - Air Quality Conformity
  - Financial Assumptions



Planning



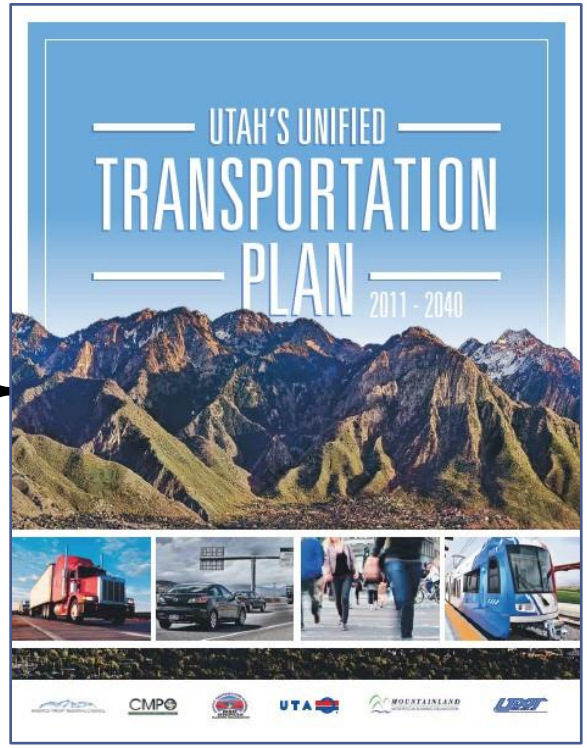
UDOT Long Range Transportation Plan 2011-2040

Cache MPO Regional Transportation Plan 2011 -2035

Dixie MPO Regional Transportation Plan 2011-2040

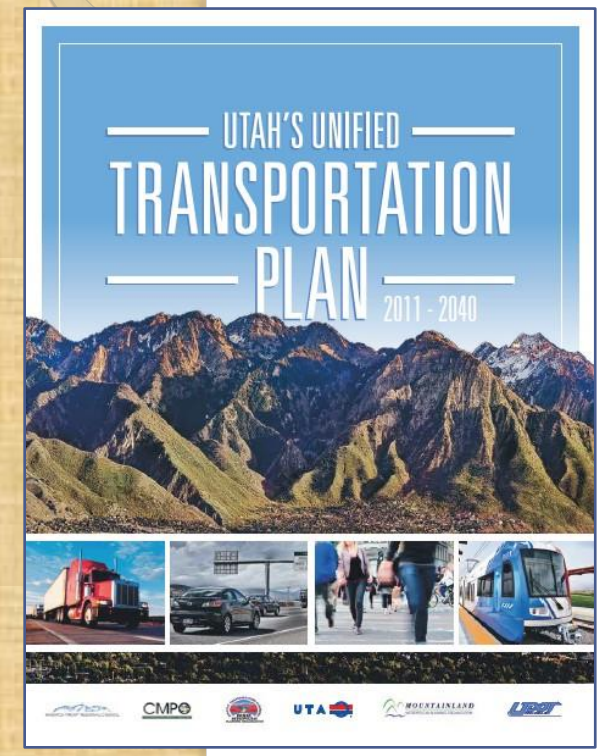
MAG Regional Transportation Plan 2011-2040

WFRC Regional Transportation Plan 2011-2040



Utah's Unified Transportation Plan

Plan to Program



Capacity Prioritization Processes

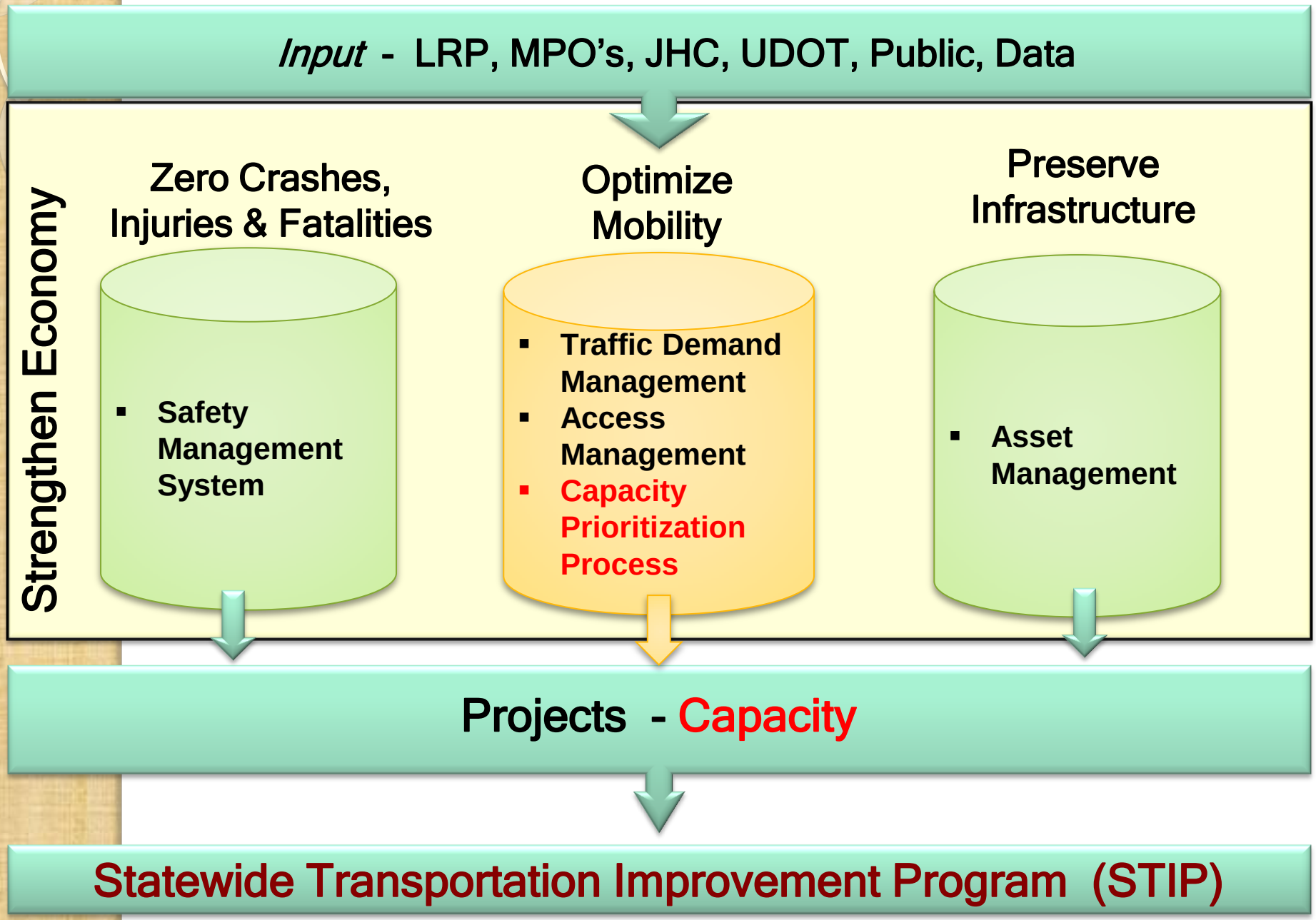
1. Widen Existing Facilities
2. New Facilities
3. Upgrade Existing At-Grade Intersection
4. New Interchange on Existing Freeway
5. Upgrade Existing Interchange
6. Passing Lanes

Utah Department of Transportation

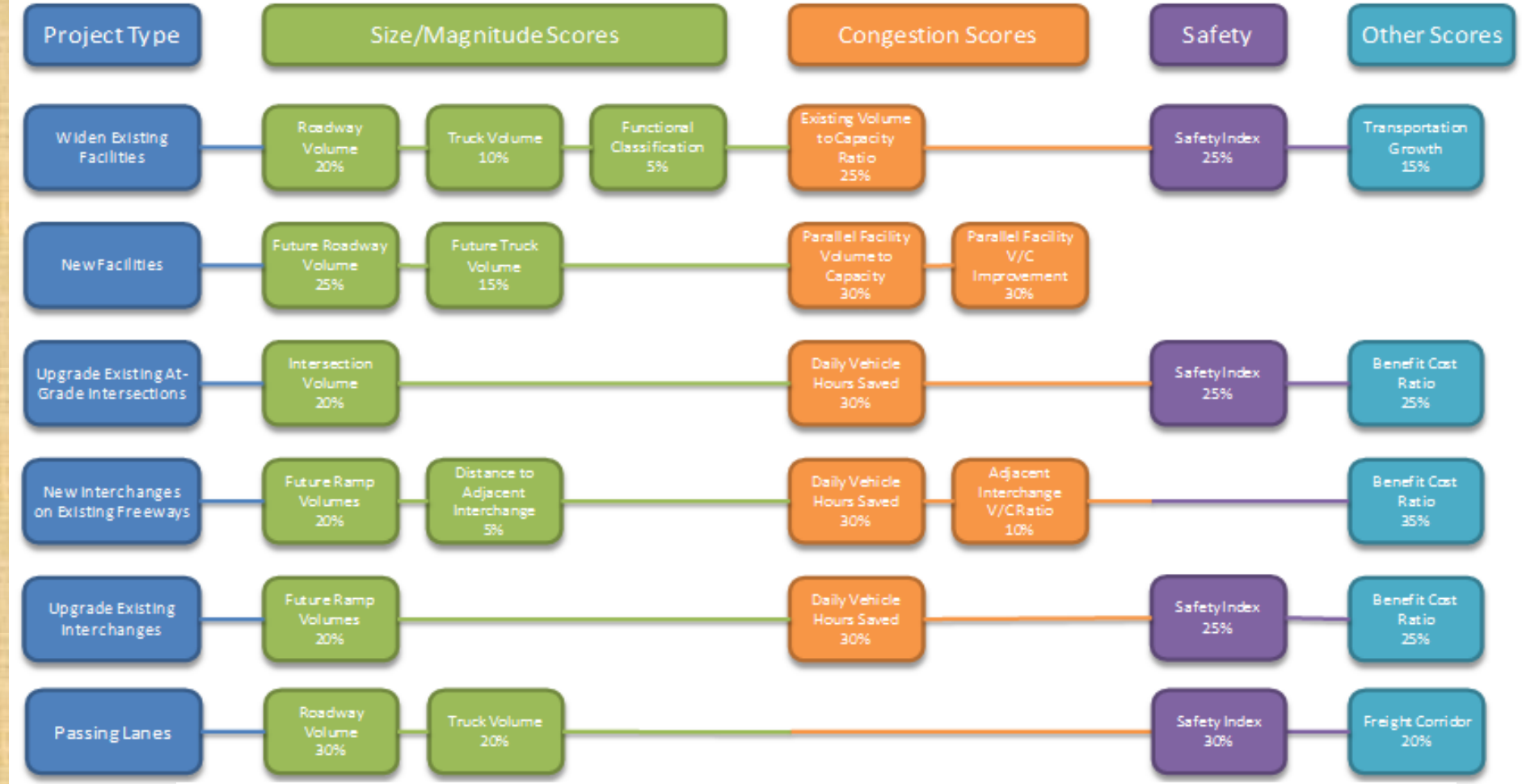
Statewide Transportation Improvement Program

2014 – 2019

Plan to Program



Plan to Program



Existing Prioritization Process Scoring Summary

Project Type	Size/Magnitude	Congestion	Safety	Other	Total
1. Widen Existing Facilities	35	25	25	15	100
2. New Facilities	40	60	NA	NA	10
3. Upgrade Existing At-grade Intersections	20	30	25	25	100
4. New Interchanges on Existing Freeways	25	40	NA	35	100
5. Upgrade Existing Interchanges	20	30	25	25	100
6. Passing Lanes	50	NA	30	20	100

Plan to Program

Prioritization Processes

1. Widen Existing Facilities
2. New Facilities
3. Upgrade Existing At-Grade Intersection
4. New Interchange on Existing Freeway
5. Upgrade Existing Interchange
6. Passing Lanes

Optimize Mobility

Capacity – #1 Widen Existing Facility

Objective	Factor	Max. Score
Transportation Efficiency	Total AADT- Volume of Traffic on a Daily Average	20
	Truck AADT	10
	V/C – Measure of a Highway's Congestion	25
	Functional Class – Measure of Road Importance	5
	Transportation Growth	15
Safety	Safety Score – Combination of Measures	25
	Total Possible Points	100

Optimize Mobility

Capacity - #1 Widen Existing Facility

Existing AADT Score

Min AADT	Score
0	2
11,000	4
33,000	8
44,000	10
55,000	12
66,000	14
77,000	16
88,000	18
99,000	20

Existing Truck AADT Score

Min Truck AADT	Score
0	1
2,001	2
4,001	4
5,001	5
6,001	6
7,001	7
8,001	8
9,001	9
10,001	10

V/C Score

Min V/C	Score
0.00	0
0.60	1.25
0.65	2.5
0.75	5
0.80	6.25
0.85	7.5
0.90	10
0.95	12.5
1.00	15
1.05	17.5
1.10	20
1.15	22.5
1.20	25

Optimize Mobility

Capacity - #1 Widen Existing Facility

Functional Class Score

FC	Score	Note
1	5	Rural Interstate
2	3	Rural Other Principal Arterial
6	2	Rural Minor Arterial
7	0	Rural Major Collector
8	0	Rural Minor Collector
9	0	Rural Local
11	5	Urban Interstate
12	4	Urban Other Freeway and Expressway
14	4	Urban Other Principal Arterial
16	2	Urban Minor Arterial
17	1	Urban Collector
19	0	Urban Local

Transportation Growth Score

Min Annual Growth	Score
0.0%	3
1.0%	6
2.0%	9
3.0%	12
4.0%	15

Safety Score

Safety Index	Score
0.00	0.0
1.00	2.5
2.00	5.0
3.00	7.5
4.00	10.0
5.00	12.5
6.00	15.0
7.00	17.5
8.00	20.0
9.00	22.5
10.00	25.0

Optimize Mobility

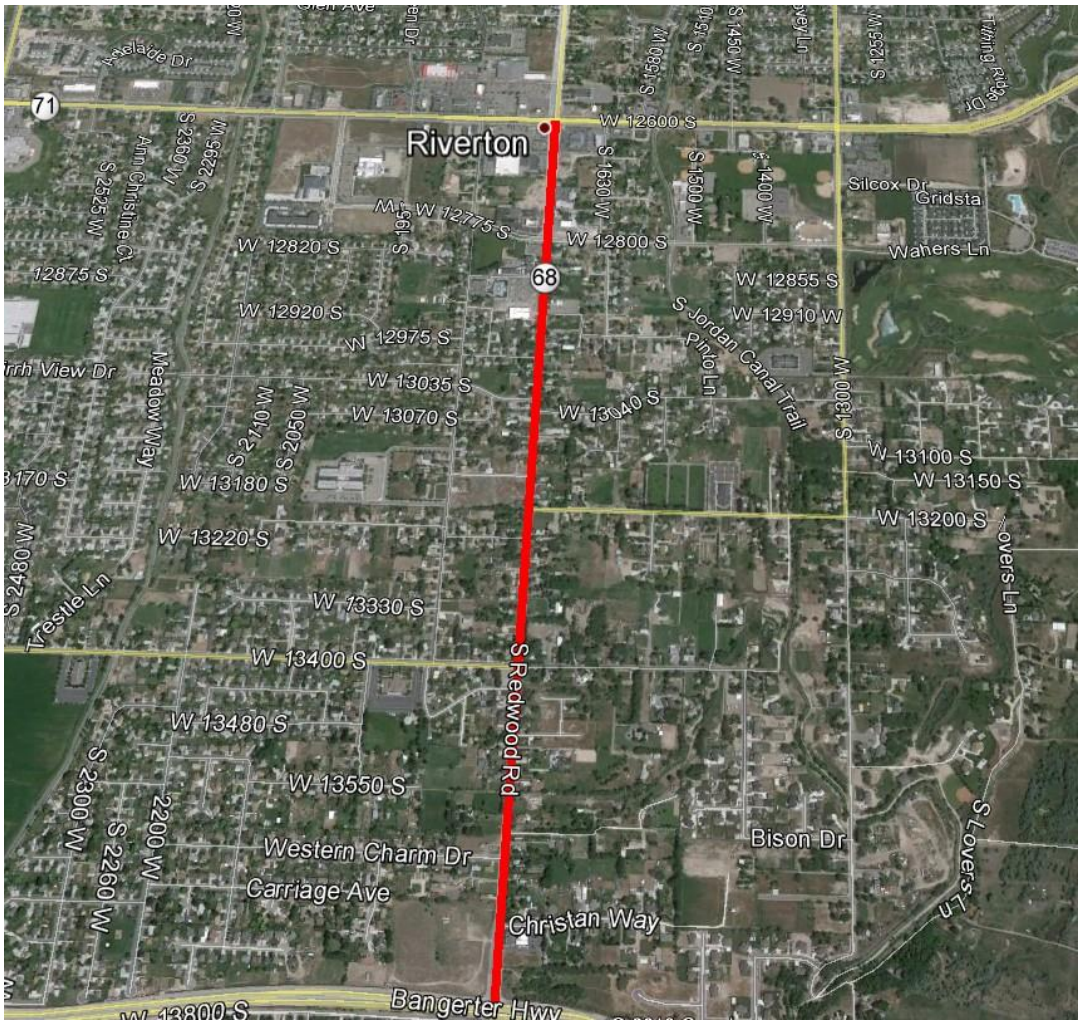
Capacity – #1 Widen Existing Facility

- The Safety Index is a value ranging from: 1 (very good) to 10 (very poor), which represents the degree of risk to the driver, in terms of both crash rate and severity.
- Input/factors include number of crashes, number of high severity crashes, AADT and functional class.
- The crash rate, (crashes/MVMT) and severity (#/per mile), are weighted 1 through 3 for each mile section, by functional classification, giving a crash rate score and a severity score.
- Safety Index (SI) = Crash Rate Score + 3(Severity Score)-2
  (SI Range = 1 to 10)

Optimize Mobility

udot.utah.gov

Capacity – #1 Widen Existing Facility –
Example: Redwood Road; Bangerter Hwy To 12600 South



Optimize Mobility

Capacity – #1 Widen Existing Facility
Example: Redwood Road; Bangerter Hwy To 12600 South

Project	2011 AADT	Truck AADT	FC	V/C	Safety Score	Ave Trans. Growth	Total	Rank
Redwood Road; Bangerter Hwy To 12600 South	21,597	1,300	14	1.2	8.5	3.8%		
Score	4	1	4	22.5	21.25	12	65	#7

Plan to Program

Prioritization Processes

1. Widen Existing Facilities
2. New Facilities
3. Upgrade Existing At-Grade Intersection
4. New Interchange on Existing Freeway
5. Upgrade Existing Interchange
6. Passing Lanes

Optimize Mobility

Capacity - #2 New Facility

Objective	Factor	Max. Score
Transportation Efficiency	Projected AADT on New Facilities in 2040	25
	Projected Truck AADT on New Facilities in 2040	15
	V/C on Existing System if Corridor is not Built	30
	% V/C Improvement on System if Corridor is Built	30
	Total Possible Points	100

Optimize Mobility

Capacity - #2 New Facility

Future AADT Score

Min AADT	Score
0	2.5
16,000	5
24,000	7.5
32,000	10
48,000	15
56,000	17.5
64,000	20
72,000	22.5
80,000	25

Future Truck AADT Score

Min Truck AADT	Score
0	1.5
1,600	3
2,400	4.5
3,200	6
4,800	9
5,600	10.5
6,400	12
7,200	13.5
8,000	15

No Build V/C Score

Min V/C	Score
0.00	0.0
0.60	1.5
0.65	3.0
0.70	4.5
0.75	6.0
0.80	7.5
0.85	9.0
0.90	12.0
0.95	15.0
1.00	18.0
1.15	27.0
1.20	30.0

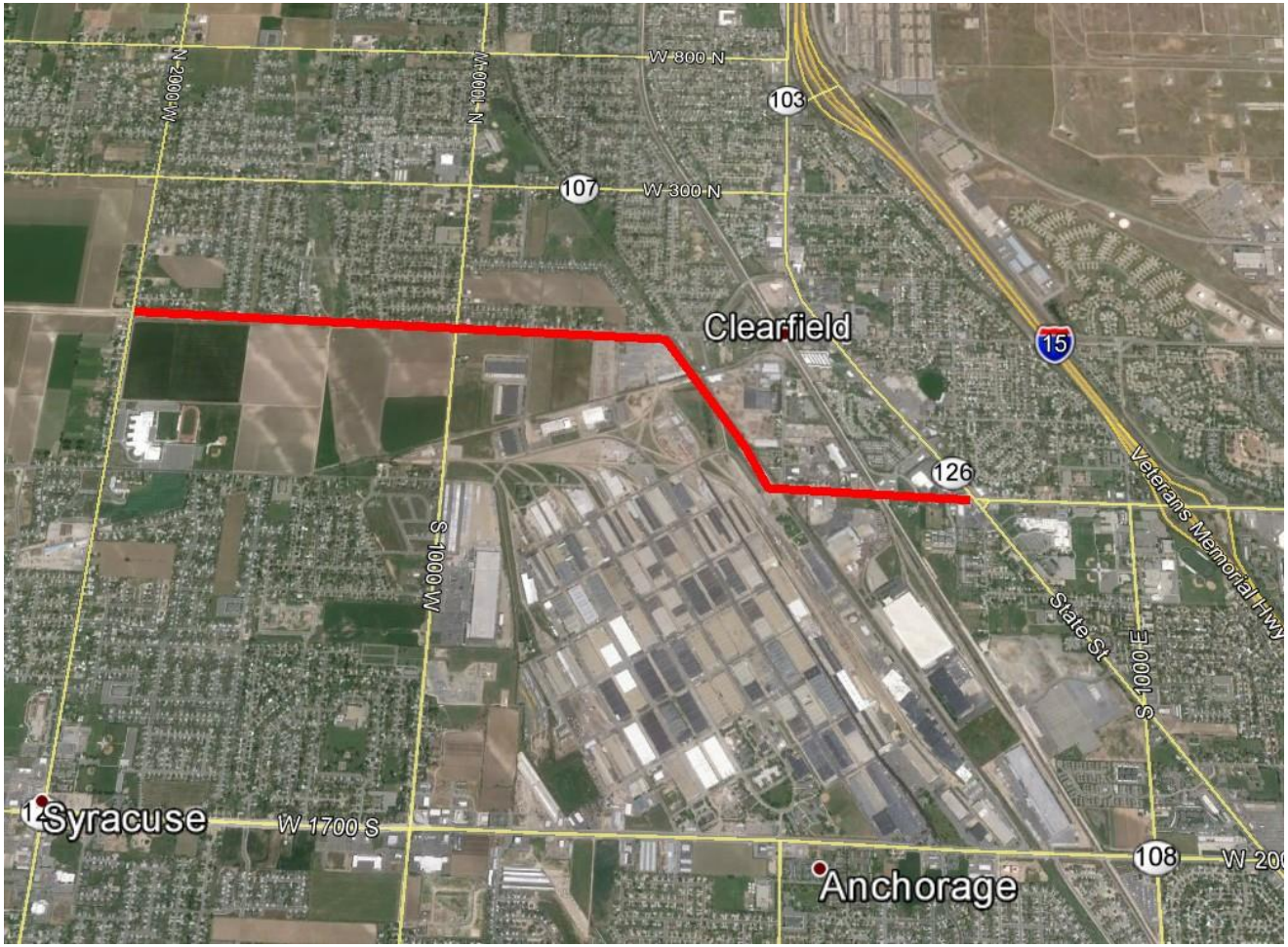
Improve V/C Score

Percent Improvement	Score
0.0%	0
5.0%	3
10.0%	6
15.0%	12
20.0%	21
25.0%	30

Optimize Mobility

Capacity – #2 New Facility

Example: SR-193; Extension, 2000 West to State Street



Optimize Mobility

Capacity – #2 New Facility

Example: SR-193; Extension, 2000 West to State Street

Project	2040 AADT	2040 Truck AADT	NO Build V/C	% System Improvement, with new facility	Total	Rank
SR-193; Extension, 2000 West to State Street	21,644	3,161	.99	45.5%		
Score	5	4.5	15	30	55	#8

Plan to Program

Prioritization Processes

1. Widen Existing Facilities
2. New Facilities
3. Upgrade Existing At-Grade Intersection
4. New Interchange on Existing Freeway
5. Upgrade Existing Interchange
6. Passing Lanes

Optimize Mobility

Capacity – #3 Upgrade Existing At-grade Intersection

Objective	Factor	Max Score
Transportation Efficiency	Total AADT- Volume of traffic on a daily average for both mainline and arterial	20
	Daily Vehicle Hours Saved - Estimate based on travel time savings per vehicle	30
	Benefit Cost Ratio - Total user cost benefit from delay savings divided by the net cost of the interchange after local participation	25
Safety	Safety Score – Combination of measures	25
	Total Possible Points	100

Optimize Mobility

Capacity - #3 Upgrade Existing At-Grade Intersection

Future Entering Traffic Score

Min AADT	Score
0	0
40,000	4
50,000	8
60,000	12
70,000	16
80,000	20

Vehicle Hours Saved Score

Min Hours Saved	Score
0	0
300	6
400	12
500	18
600	24
700	30

Benefit-Cost Score

B-C Ratio	Score
0.0	0
2.0	5
4.0	10
6.0	15
8.0	20
10.0	25

Safety Score

Safety Index	Score
0.00	0.0
1.00	2.5
2.00	5.0
3.00	7.5
4.00	10.0
5.00	12.5
6.00	15.0
7.00	17.5
8.00	20.0
9.00	22.5
10.00	25.0

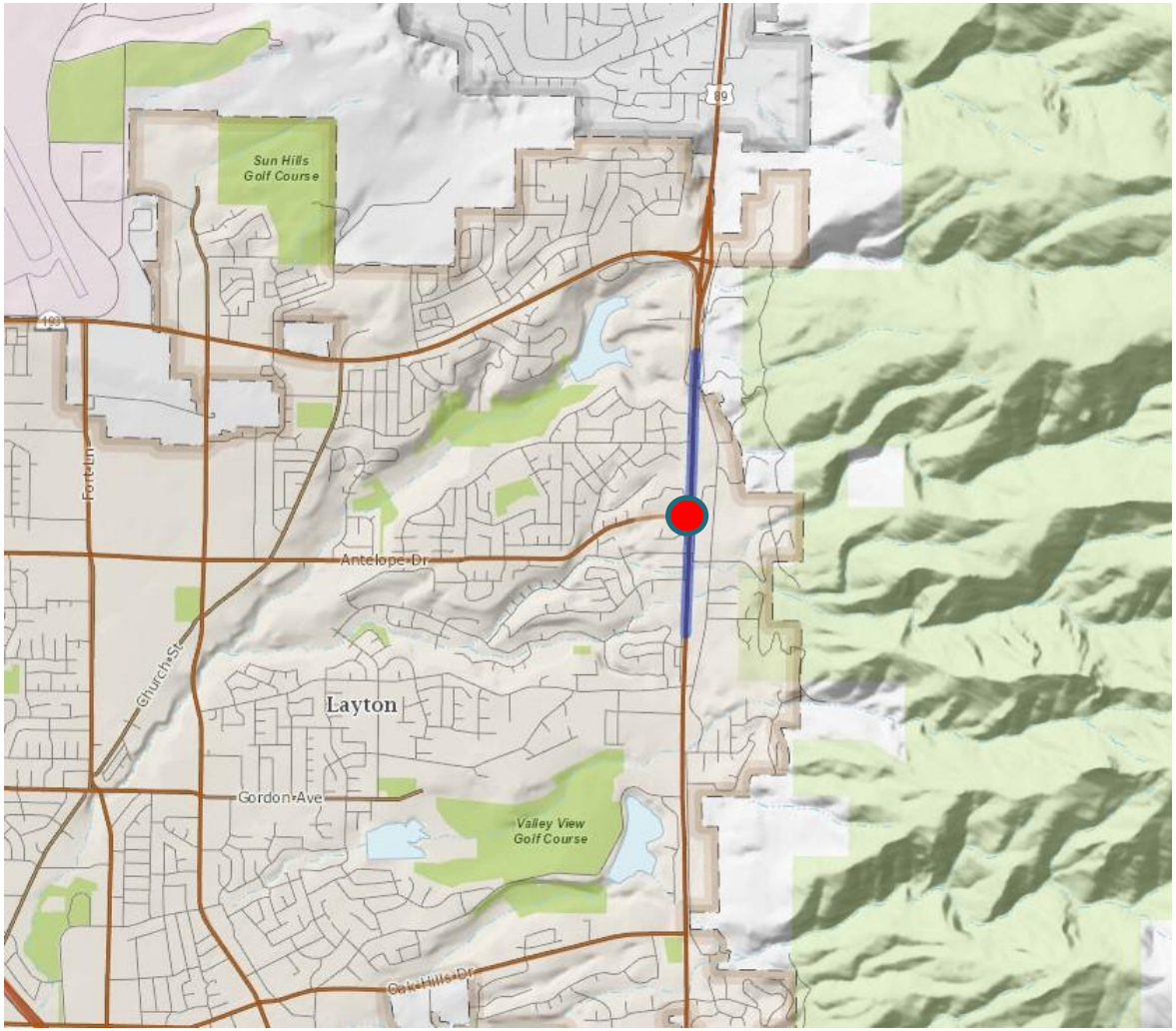
Optimize Mobility

Capacity – #3 Upgrade Existing At-grade Intersection
Example: US-89; Antelope Dr. Intersection Improvements

Project	2040 AADT	B/C	Daily Vehicle Hours Saved	Safety Score	Total	Rank
US-89; Antelope Dr. Intersection Improvements	86,000	2.2	717	5.5		
Score	20	5	30	13.8	69	#5

Optimize Mobility

Capacity – #3 Upgrade Existing At-grade Intersection
Example: US-89; Antelope Dr. Intersection Improvements



Plan to Program

Prioritization Processes

1. Widen Existing Facilities
2. New Facilities
3. Upgrade Existing At-Grade Intersection
4. New Interchange on Existing Freeway
5. Upgrade Existing Interchange
6. Passing Lanes

Optimize Mobility

Capacity – #4 New Interchange On Existing Freeway

Objective	Factor	Max Score
Transportation Efficiency	Total Ramp Daily Traffic- Total Estimated AADT for all 4 Ramps	20
	Daily Vehicle Hours Saved – Estimate based on travel time savings using existing transportation system	30
	Benefit Cost Ratio – Total user cost benefit from delay savings divided by the net cost of the interchange after local participation	35
	Adjacent Interchange V/C – Measures the effect on adjacent interchange	10
	Distance to Adjacent Interchanges – Addresses spacing and accessibility issues	5
	Total Possible Points	100

Optimize Mobility

Capacity – #4 New Interchange On Existing Freeway

Future Ramp Traffic Score

Min AADT	Score
0	0
10,000	4
15,000	8
20,000	12
25,000	16
30,000	20

Vehicle Hours Saved Score

Min Hours Saved	Score
0	0
300	6
400	12
500	18
600	24
700	30

Benefit-Cost Score

B-C Ratio	Score
0.0	0
2.0	7
4.0	14
6.0	21
8.0	28
10.0	35

Adjacent Interchange Future V/C Score

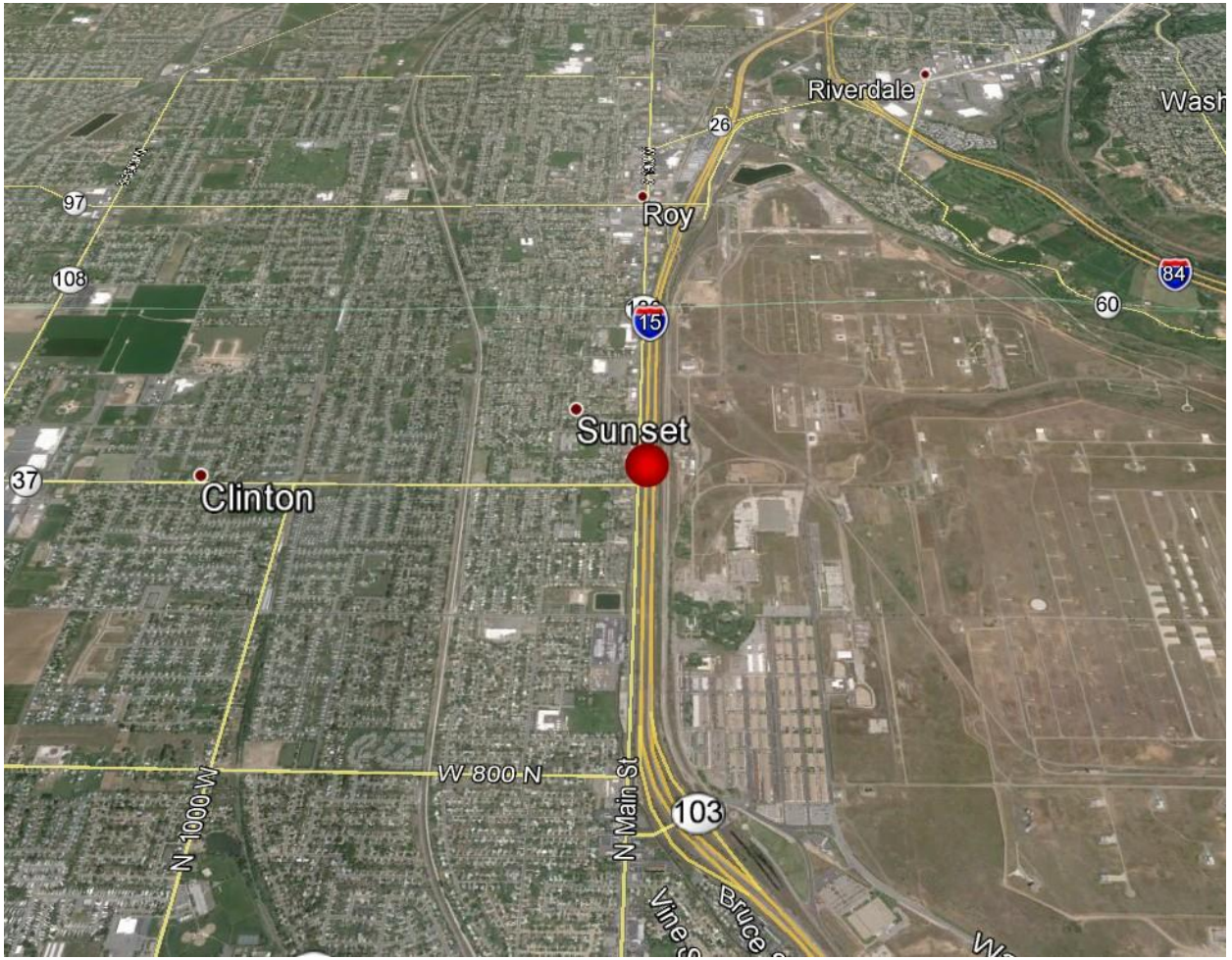
Min V/C	Score
-5.00	0
0.05	2
0.10	4
0.15	6
0.20	8
0.25	10

Distance to Adjacent Interchange Score

Distance	Score
0.0	0
1.0	1
1.5	2.5
2.0	5

Optimize Mobility

Capacity – #4 New Interchange On Existing Freeway
Example: I-15; SR-37 Interchange and 1800 N. Widening



Optimize Mobility

Capacity – #4 New Interchange On Existing Freeway
Example: I-15; SR-37 Interchange and 1800 N. Widening

Project	2040 Ramp AADT	B/C	Daily Vehicle Hours Saved	Adjacent Interchange Future V/C	Average Distance To Adjacent Interchange	Total	Rank
I-15 Interchange at 1800 North	41,000	2.1	683	0.33	1.10		
Score	20	7	24	10	1	62	#1

Plan to Program

Prioritization Processes

1. Widen Existing Facilities
2. New Facilities
3. Upgrade Existing At-Grade Intersection
4. New Interchange on Existing Freeway
5. Upgrade Existing Interchange
6. Passing Lanes

Optimize Mobility

Capacity – #5 Upgrade Existing Interchange

Objective	Factor	Max Score
Transportation Efficiency	Future Ramp Daily Traffic- Total Estimated AADT for all 4 Ramps	20
	Daily Vehicle Hours Saved – Estimate based on travel time savings using existing transportation system	30
	Benefit Cost Ratio – Total user cost benefit from delay savings divided by the net cost of the interchange after local participation	25
Safety	Safety Score – Combination of Measures	25
	Total Possible Points	100

Optimize Mobility

Capacity – #5 Upgrade Existing Interchange

Future Ramp Traffic Score

Min AADT	Score
0	0
10,000	4
20,000	8
30,000	12
40,000	16
50,000	20

Vehicle Hours Saved Score

Min Hours Saved	Score
0	0
100	6
200	12
300	18
400	24
500	30

Benefit-Cost Score

B-C Ratio	Score
0.0	0
1.0	5
2.0	10
3.0	15
4.0	20
6.0	25

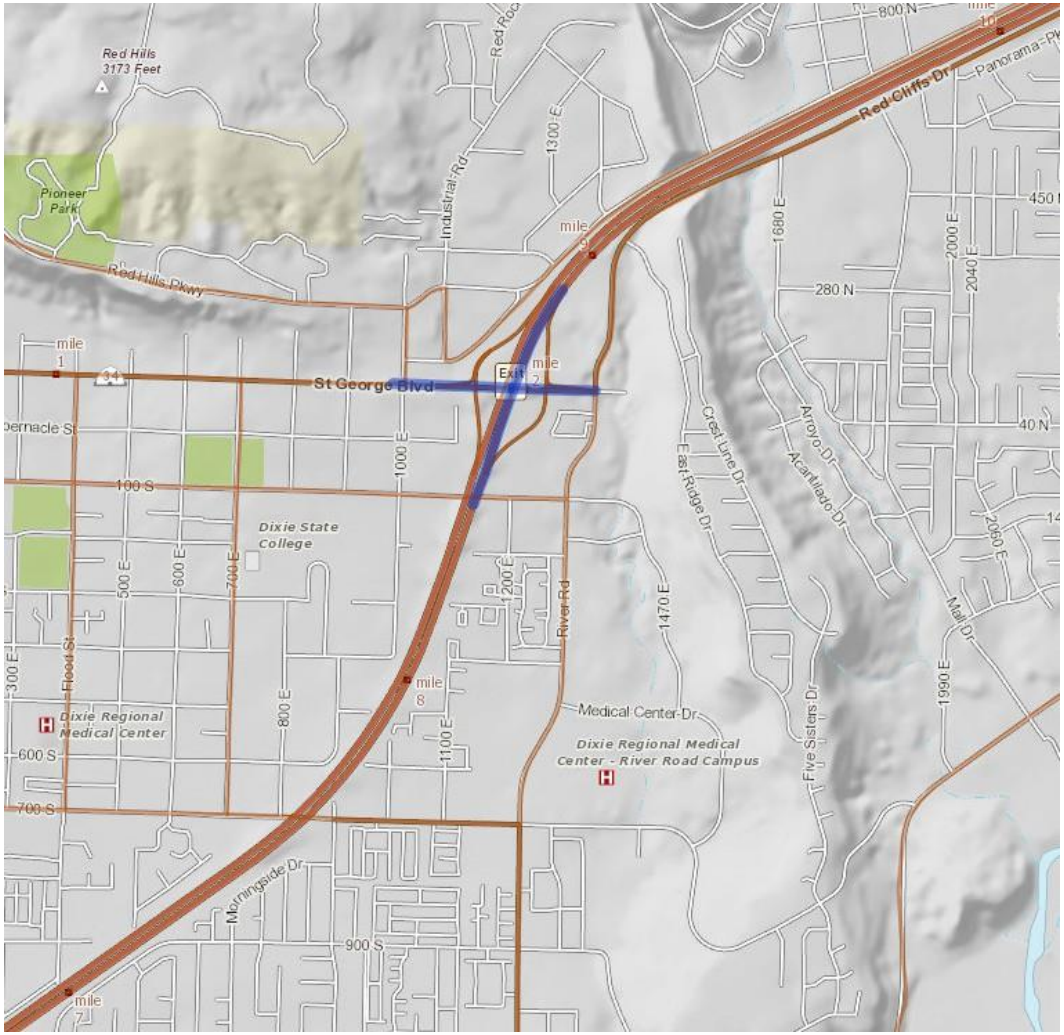
Safety Score

Safety Index	Score
0.00	0.0
1.00	2.5
2.00	5.0
3.00	7.5
4.00	10.0
5.00	12.5
6.00	15.0
7.00	17.5
8.00	20.0
9.00	22.5
10.00	25.0

Optimize Mobility

Capacity – #5 Upgrade Existing Interchange

Example: I-15; MP 8 Interchange Reconfiguration (DDI)



Optimize Mobility

Capacity – #5 Upgrade Existing Interchange

Example: I-15; MP 8 Interchange Reconfiguration (DDI)

Project	2040 Ramp AADT	B/C	Daily Vehicle Hours Saved	Safety Index	Total	Rank
I-15 Interchange at 1800 North	138,000	13.5	1150	4.0		
Score	20	25	30	10	85	#5

Plan to Program

Prioritization Processes

1. Widen Existing Facilities
2. New Facilities
3. Upgrade Existing At-Grade Intersection
4. New Interchange on Existing Freeway
5. Upgrade Existing Interchange
6. Passing Lanes

Optimize Mobility

Capacity – #6 Passing Lanes

Objective	Factor	Max Score
Transportation Efficiency	Existing AADT	30
	Existing Truck AADT	20
	Primary Freight Corridor	20
Safety	Safety Index – Combination of Measures	30
	Total Possible Points	100

Optimize Mobility

Capacity – #6 Passing Lanes

Existing AADT Score

Min AADT	Score
0	3
2,501	6
5,001	9
7,501	12
10,001	15
12,501	18
15,001	21
17,501	24
20,001	27
22,501	30

Existing Truck AADT Score

Min Truck AADT	Score
0	2
501	4
1,001	6
1,501	8
2,001	10
3,001	12
4,001	14
5,001	16
6,001	18
7,001	20

Safety Score

Safety Index	Score
0.00	0.0
1.00	3.0
2.00	6.0
3.00	9.0
4.00	12.0
5.00	15.0
6.00	18.0
7.00	21.0
8.00	24.0
9.00	27.0
10.00	30.0

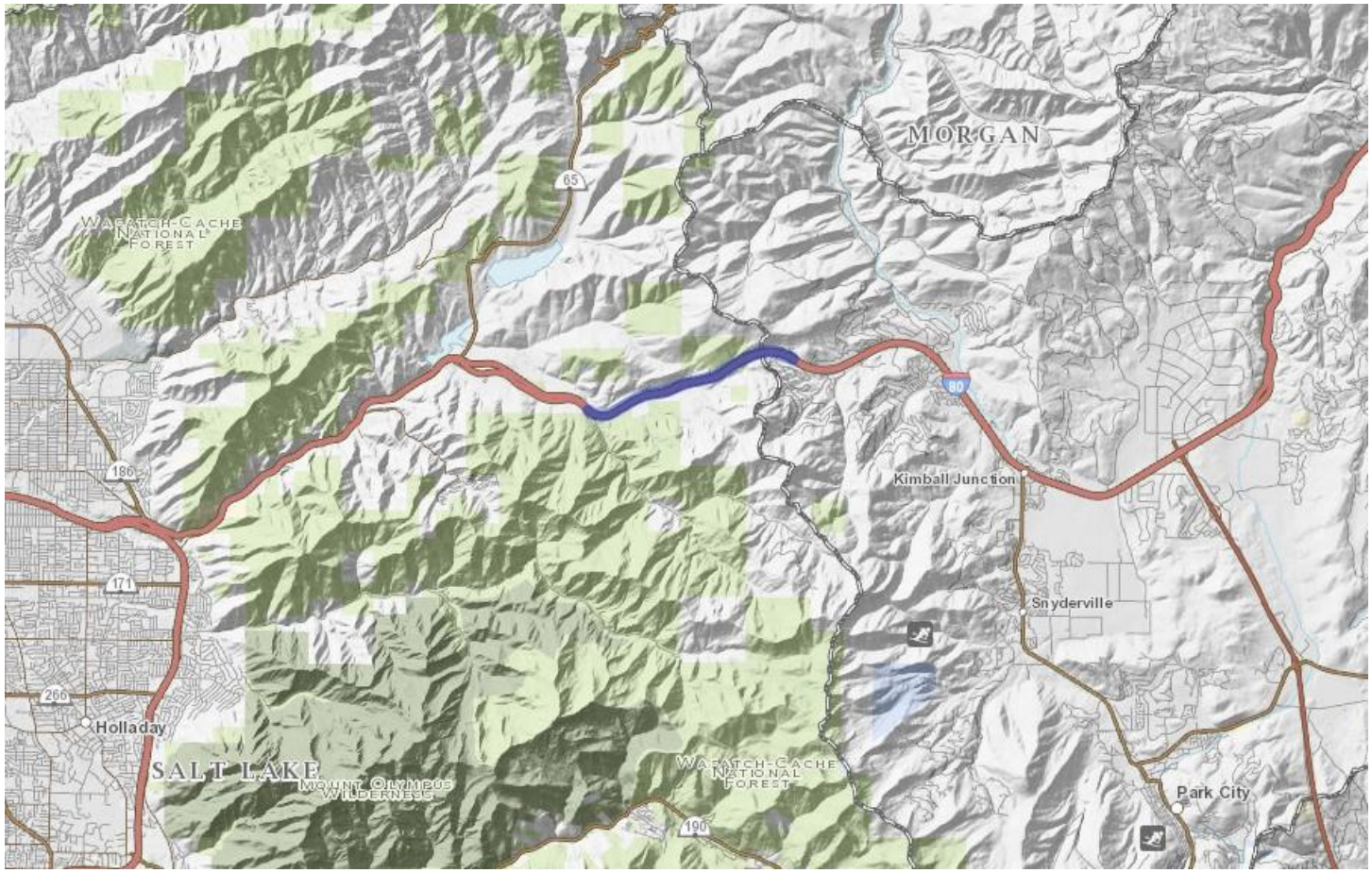
Primary Freight Corridor Score

Classification	Score
Energy Route	15
Interstate	5
Major Route	20
No	0

Optimize Mobility

Capacity – #6 Passing Lanes

Example: I-80; MP 136 to 143, Lambs Canyon to Kimball Junction



Optimize Mobility

Capacity – #6 Passing Lanes

Example: I-80; MP 136 to 143, Lambs Canyon to Kimball Junction

Project	Existing AADT	Existing Truck AADT	Primary Freight Corridor	Safety Index	Total	Rank
I-80; MP 136 to 143, Lambs Canyon to Kimball Junction	45,490	12,320	Interstate	7.0		
Score	30	20	5	21	76	#2

Plan to Program

Input - LRP, MPO's, JHC, UDOT, Public, Data

Strengthen Economy

Zero Crashes, Injuries & Fatalities

- Safety Management System

Optimize Mobility

- Traffic Demand Management
- Access Management
- Capacity Prioritization Process

Preserve Infrastructure

- Asset Management

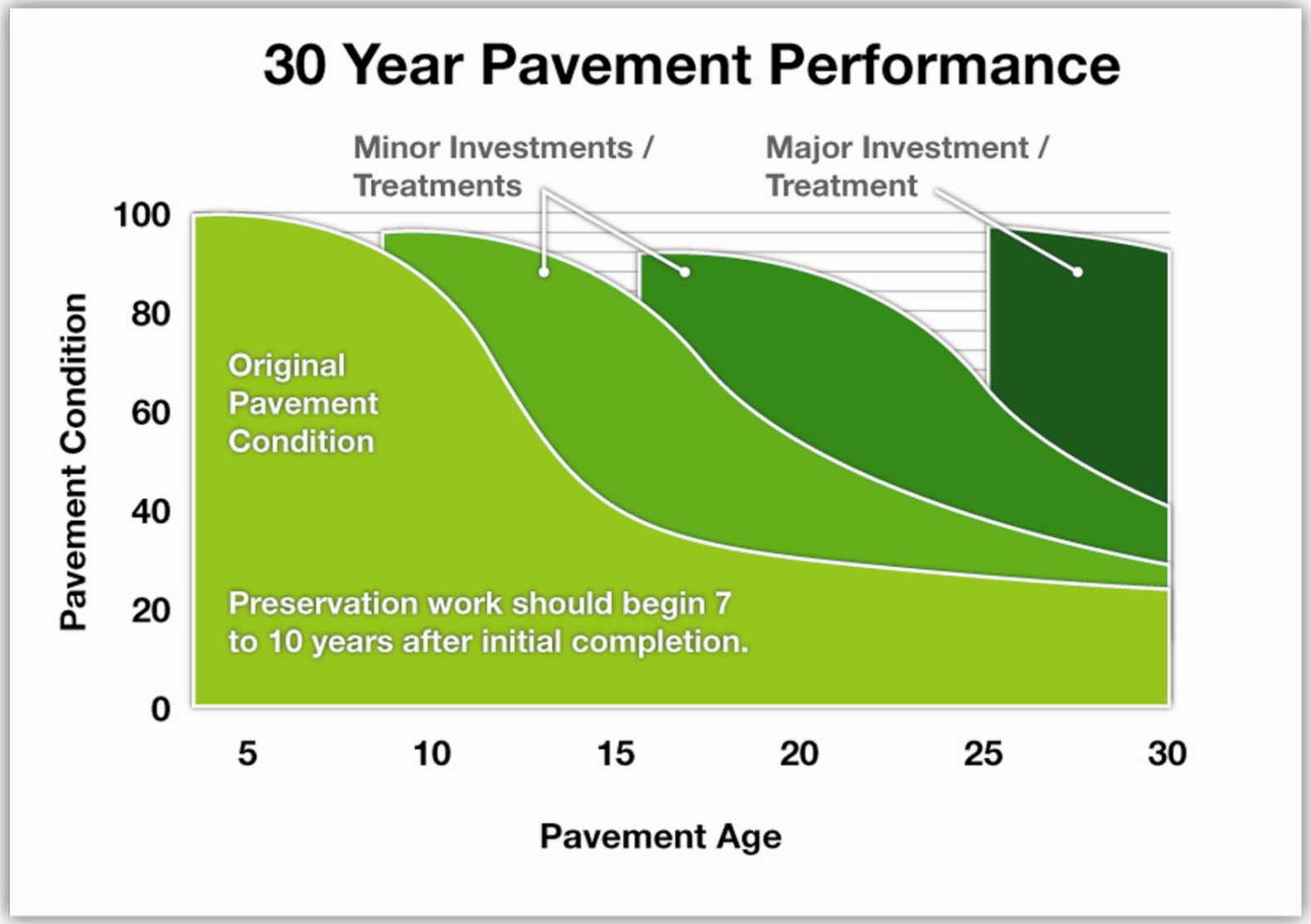
Projects – Preservation, Rehabilitation, Assets, Level II

Statewide Transportation Improvement Program (STIP)

Preserve Infrastructure

- Recommendations are based on accurate data, and sound engineering and economic analysis
- Long-term view of assets
- Improved decision making, supported by policies, performance based goals, performance measures, and appropriate levels of service

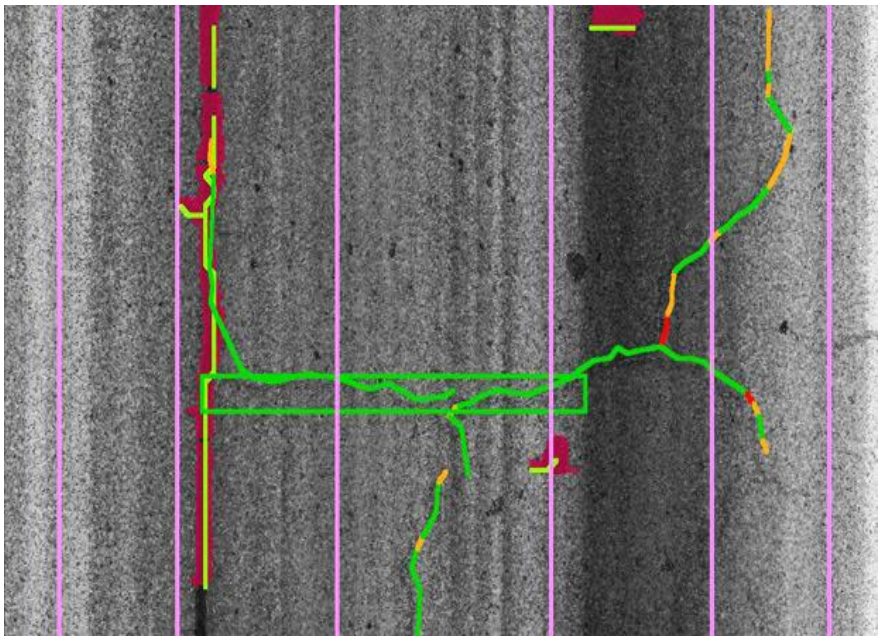
Preserve Infrastructure



Preserve Infrastructure

UDOT Keeping Utah Moving

Automated Pavement Data Collection

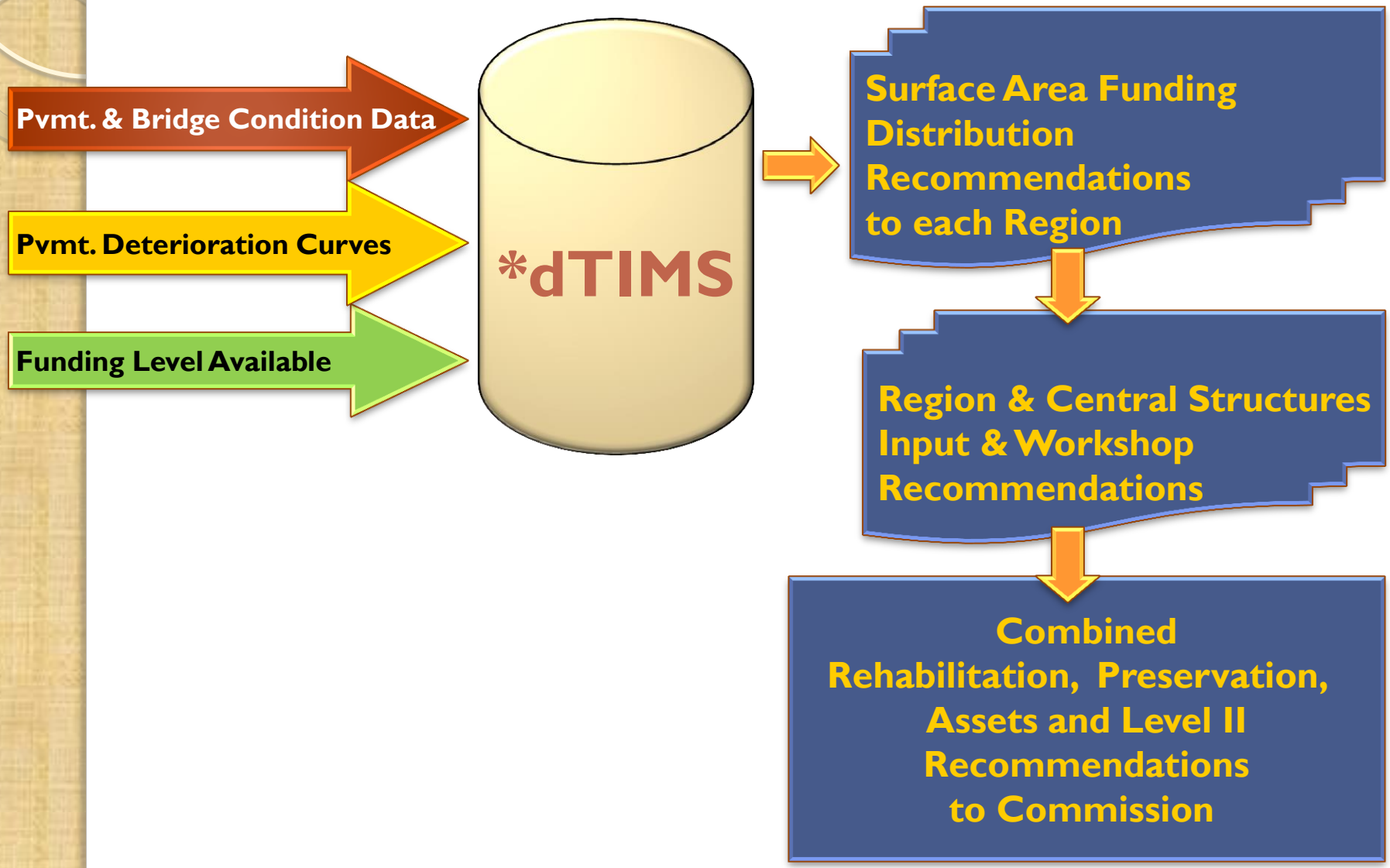


Preserve Infrastructure

Bridge Inspections

Measuring and tracking condition of 1,750 bridges statewide

Preserve Infrastructure



*dTIMS (Deighton's Total Infrastructure Management System)

Preserve Infrastructure

DTIMS Funding Distribution – 2017
Proposed Interstate, NHS & Level 1

	dTIMS Region Distribution		dTIMS Recommended Splits & Surface Areas						
						Interstate	NHS	Level 1	Total
Region 1	20.4%	$ 31,904,203	Preservation	34.5%	$ 11,006,950	50	54	37	141
			Rehabilitaton	65.5%	$ 20,897,253	32	20	50	102
Region 2	28.6%	$ 44,728,441	Preservation	34.0%	$ 15,207,670	156	54	19	229
			Rehabilitaton	66.0%	$ 29,520,771	54	72	20	146
Region 3	24.3%	$ 38,003,536	Preservation	27.0%	$ 10,260,955	36	73	43	152
			Rehabilitaton	73.0%	$ 27,742,581	17	70	45	132
Region 4	26.6%	$ 41,600,578	Preservation	66.7%	$ 27,747,586	287	255	87	629
			Rehabilitaton	33.3%	$ 13,852,993	0	31	31	62
		$ 156,236,758			$ 64,223,160	41%			
					$ 92,013,598	59%			
					$ 156,236,758				

Preserve Infrastructure

DTIMS Funding Distribution – 2017
Proposed Level II

		ST_LVL2_PVMT
Percent Dist.	Total =	$ 40,000,000
76%	Level II Rehabilitation	$ 30,400,000
24%	Level II Preservation	$ 9,600,000

	ST_LVL2_PVMT	
DTIMS #'s	Level II Preservation	Level II Rehabilitation
Region 1	12.50%	10.53%
Region 2	8.33%	11.84%
Region 3	12.50%	14.47%
Region 4	66.67%	63.16%
Total Check	100.0%	100.00%

Level II Roads Preservation			
Region	%	ST_LV2_PVMT	
R-1	12.5%	$ 1,200,000	2017
R-2	8.3%	$ 800,000	
R-3	12.5%	$ 1,200,000	
R-4	66.7%	$ 6,400,000	
Total	100.0%	$ 9,600,000	

Level II Roads Rehabilitation			
Region	%	ST_LV2_PVMT	
R-1	10.53%	$ 3,200,000	2017
R-2	11.84%	$ 3,600,000	
R-3	14.47%	$ 4,400,000	
R-4	63.16%	$ 19,200,000	
Total	100.0%	$ 30,400,000	


QUESTIONS?
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